



NCIC HPV  
Sent by: Mary-Beth  
Weaver

To: NCIC HPV@EPA  
cc:  
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Subject: Response to EPA Comments on Test Plan

08/18/2003 10:08 AM

Oscar Hernandez  
Director, Risk Assessment Division  
U.S. Environmental Protection Agency

August 14, 2003

Dear Director Hernandez:

The C.P. Hall Company is responding to the EPA Comments on the robust summaries and test plan for N,N-Dimethylalkanamides as posted on the Chem RTK HPV Challenge Program Web site.

#### General EPA comments

- Category Justification ? The EPA agrees with the submitter that the category justification is acceptable and that the category definition is clear and unambiguous.
- Physicochemical Properties and Environmental Fate - The EPA believes that adequate data are available for all endpoints except biodegradation. However, the submitter needs to provide the physicochemical properties and fugacity data provided in the test plan for CAS No. 14433-76-2 in robust summary form.
- Health Effects ? The EPA agrees that adequate data are available for all endpoints for the purposes of the HPV Challenge Program.
- Ecological Effects ? The EPA agrees that adequate data are available for all endpoints for the purposes of the HPV Challenge Program.

#### Specific issues raised by the EPA and response by The C. P. Hall Company

1. Issue: The EPA states that the submitter provided a biodegradation in soil data, that is comparable to OECD Guideline 304 A (Inherent Biodegradation in Soil). The EPA believes that neither the objective of 304A nor the test matrix (soil) resemble those of a ready biodegradation test.

Response: The C.P. Hall Company submitted two separate, well-conducted soil biodegradation studies that determined biodegradation in four different soils. These studies indicated that in all cases that N,N-dimethyldecanoic acid amide (CAS No. 14433-76-2) biodegraded rapidly with a short half-life. The submitter also provided the results of EPIWIN Biowin modeling that predicted the test substance is readily biodegradable.

Simple aliphatic amides of reasonably short chain length are generally known to biodegrade readily; first to carboxylic acids, followed by further microcosm-induced breakdown. In consideration of the Agency's concern that the above data are insufficient to characterize biodegradability in water, and to further illustrate the general ability of aliphatic amides to biodegrade, biodegradation in water data for two similar aliphatic amides are presented. These other amides are:

Caprolactam (CAS No. 105-60-2). This amide is the cyclic amide of 6-amino hexanoic acid, with the molecular structure shown below:

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Caprolactam is a reasonably good surrogate for N,N-dimethyloctanamide

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and N,N-dimethyldecanamide, because its alkyl chain length is in a similar range (C6) and because its amide function is alkylated. The ring structure and alkylated amide function would tend to make this substance somewhat more hindered to biodegradative attack as compared to an open chain, non-alkylated carboxylic acid amide, and therefore would be a conservative predictor of biodegradability of N,N-dimethyloctanamide and N,N-dimethyldecanamide. Even so, results of a 5 day COD test performed on over 100 materials showed that caprolactam was readily degraded (94.3%, 16.0 mg COD/g/h) (Pittier, 1976).

N,N-dimethylacetamide (CAS No. 127-19-5):

CH<sub>3</sub>(C=O)N(CH<sub>3</sub>)<sub>2</sub>

N,N-dimethylacetamide (DMAC) is a good supporting surrogate because it has a tertiary, dimethylated amide function as is the case for N,N-dimethyloctanamide and N,N-dimethyldecanamide. The only difference between DMAC and the sponsored chemicals is the length of the alkyl chains (2-carbon for DMAC and 8- or 10-carbon for N,N-dimethyloctanamide and N,N-dimethyldecanamide). In one study, DMAC biodegradation was 96% after 5 days (BASF AG, 1977). In a MITI (BOD of ThOD) test, biodegradation was 77-83% after 14 days (CITI, 1992).

In conclusion, the submitter responds to the EPA comments with a weight-of-evidence approach for biodegradability. To supplement EPIWIN modeling and the two soil biodegradability studies, the submitter presents biodegradation (in water) studies for two surrogates. As in the case of N,N-dimethyloctanamide and N,N-dimethyldecanamide, the surrogates are simple aliphatic amides with the same functionality. Both of these surrogates biodegrade readily, which is in uniform agreement with the data previously presented. The submitter believes that the weight of evidence clearly indicates that N,N-dimethyloctanamide and N,N-dimethyldecanamide biodegrade readily in both water and soil under a variety of conditions and different microcosms. The C.P. Hall Company has revised the dossiers for both substances to include summaries of the biodegradation studies for caprolactam and N,N-dimethylacetamide, and has also appropriately revised the test plan to include the new surrogate data.

2. Issue: The EPA states that the submitter needs to provide the physicochemical properties data for CAS No. 14443-76-2 in robust summary format.

Response: The C.P. Hall Company has again reviewed the dossiers for both CAS No. 14443-76-2 and 1118-92-9 with respect to these data, and believes that the data have been presented in robust summary format. The submitter respectfully requests that the Agency be more specific as to where this format has not been followed.

3. Issue: There has been a typographical error in section 4.4.2 of the test plan.

Response: The submitter has revised the test plan to correct this error.

4. Issue: Acute Toxicity. The submitter needs to clarify the high dose level for the acute oral toxicity study in rats.

Response: The high dose level for the acute toxicity study in question was 5 g/kg, not 5 ml/kg as originally stated. The

typographical error was corrected.

#### Conclusion

The C.P. Hall Company appreciates the opportunity to respond to the EPA comments. The robust summary set and test plan have been revised in response to the comments (see attachments).

Yours truly,

Gary Wentworth, Ph.D.

Vice President, Research & Development

(See attached file: Hallcomid Test Plan Aug 11, 2003rgld.pdf) (See attached file: 1118929OctanamidAug1clean.pdf) (See attached file: 14433762IUCLIDAug1clean.pdf)

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